

What is claimed is:

Sub B27 1. A golf shaft produced by baking a plurality of fiber prepreg layers, the shaft being a laminate comprising:

a main layer consisting of resin-impregnated high-strength high-elasticity fiber;

a metal wire layer laid over the main layer; and

a layer of low-elasticity fiber, laid over the metal wire layer, impregnated with resin through which the underlying metal wire layer can be seen.

2. A golf shaft produced by baking a plurality of fiber prepreg layers, the shaft being a laminate comprising:

a main layer consisting of resin-impregnated high-strength high-elasticity fiber;

a metal wire layer, laid over the main layer, which consists of metal wires aligned bias with respect to the axis of the main layer; and

a layer of low-elasticity fiber, laid over the metal wire layer, impregnated with resin through which the underlying metal wire layer can be seen.

3. A golf shaft produced by baking a plurality of fiber prepreg layers, the shaft being a laminate comprising:

a main layer consisting of resin-impregnated

high-strength high-elasticity fiber;

a metal wire layer laid over the main layer; and

a layer of low-elasticity fiber, laid over the metal wire layer, impregnated with resin through which the underlying metal wire layer can be seen,

the metal wire layer comprising:

a first metal wire layer which consists of metal wires spaced and aligned bias with respect to the axis of the main layer;

a transparent layer, laid over the first metal wire layer, which covers it with transparent material with a prescribed thickness;

a second metal wire layer, laid over the transparent layer, which consists of metal wires spaced and aligned in the bias direction opposite to the first metal wire layer.

4. A golf shaft produced by baking a plurality of fiber prepreg layers, the shaft being a laminate comprising:

a main layer consisting of resin-impregnated high-strength high-elasticity fiber;

a metal wire layer, laid over the main layer, which consists of metal wires aligned bias with respect to the axis of the main layer; and

a layer of low-elasticity fiber, laid over the metal wire layer, impregnated with resin through which the underlying metal wire layer can be seen,

the metal wire layer comprising:

a first metal wire layer which consists of metal wires spaced and aligned bias with respect to the axis of the main layer;

a transparent layer, laid over the first metal wire layer, which covers it with transparent material with a prescribed thickness;

a second metal wire layer, laid over the transparent layer, which consists of metal wires spaced and aligned in the bias direction opposite to the first metal wire layer.

5. A golf shaft produced by baking a plurality of fiber prepreg layers, the shaft being a laminate comprising:

a main layer consisting of resin-impregnated high-strength high-elasticity fiber;

a metal wire layer laid over the main layer; and

a layer of low-elasticity fiber, laid over the metal wire layer, impregnated with resin through which the underlying metal wire layer can be seen,

the metal wire layer comprising:

a first metal wire layer which consists of flat metal wires spaced and aligned bias with respect to the axis of the main layer;

a transparent layer, laid over the first metal wire layer, which covers it with transparent material with a prescribed thickness;

a second metal wire layer, laid over the transparent layer, which consists of flat metal wires spaced and aligned in the bias direction opposite to the first metal wire layer.

6. A golf shaft produced by baking a plurality of fiber prepreg layers, the shaft being a laminate comprising:

a main layer consisting of resin-impregnated high-strength high-elasticity fiber;

a metal wire layer, laid over the main layer, which consists of metal wires aligned bias with respect to the axis of the main layer; and

a layer of low-elasticity fiber, laid over the metal wire layer, impregnated with resin through which the underlying metal wire layer can be seen,

the metal wire layer comprising:

a first metal wire layer which consists of flat metal wires spaced and aligned bias with respect to the axis of the

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main layer;

a transparent layer, laid over the first metal wire layer, which covers it with transparent material with a prescribed thickness;

a second metal wire layer, laid over the transparent layer, which consists of flat metal wires spaced and aligned in the bias direction opposite to the first metal wire layer.

7. The golf shaft as claimed in Claim 1, wherein the low-elasticity fiber layer is made of glass fiber prepreg.

8. The golf shaft as claimed in Claim 2, wherein the low-elasticity fiber layer is made of glass fiber prepreg.

9. The golf shaft as claimed in Claim 3, wherein the low-elasticity fiber layer is made of glass fiber prepreg.

10. The golf shaft as claimed in Claim 4, wherein the low-elasticity fiber layer is made of glass fiber prepreg.

11. The golf shaft as claimed in Claim 5, wherein the low-elasticity fiber layer is made of glass fiber prepreg.

12. The golf shaft as claimed in Claim 6, wherein the low-elasticity fiber layer is made of glass fiber prepreg.

Sub B37 13. The golf shaft as claimed in Claim 3, wherein the transparent layer has a thickness from 10  $\mu$ m to 100  $\mu$ m.

14. The golf shaft as claimed in Claim 4, wherein the

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transparent layer has a thickness from 10  $\mu$ m to 100  $\mu$ m.

15. The golf shaft as claimed in Claim 5, wherein the transparent layer has a thickness from 10  $\mu$ m to 100  $\mu$ m.

16. The golf shaft as claimed in Claim 6, wherein the transparent layer has a thickness from 10  $\mu$ m to 100  $\mu$ m.

17. The golf shaft as claimed in Claim 3, wherein the transparent layer is made of glass fiber prepreg impregnated with resin having the same quality as the resin used in the main layer.

18. The golf shaft as claimed in Claim 4, wherein the transparent layer is made of glass fiber prepreg impregnated with resin having the same quality as the resin used in the main layer.

19. The golf shaft as claimed in Claim 5, wherein the transparent layer is made of glass fiber prepreg impregnated with resin having the same quality as the resin used in the main layer.

20. The golf shaft as claimed in Claim 6, wherein the transparent layer is made of glass fiber prepreg impregnated with resin having the same quality as the resin used in the main layer.

21. The golf shaft as claimed in Claim 2, wherein the

metal wires are spaced with a spacing 0.5 to 2 times as large as the wire width.

22. The golf shaft as claimed in Claim 4, wherein the metal wires are spaced with a spacing 0.5 to 2 times as large as the wire width.

23. The golf shaft as claimed in Claim 5, wherein the metal wires are spaced with a spacing 0.5 to 2 times as large as the wire width.

24. The golf shaft as claimed in Claim 1, wherein the metal wire layer is located near to the grip area along the length of the golf shaft.

25. The golf shaft as claimed in Claim 2, wherein the metal wire layer is located near to the grip area along the length of the golf shaft.

26. The golf shaft as claimed in Claim 3, wherein the metal wire layer is located near to the grip area along the length of the golf shaft.

27. The golf shaft as claimed in Claim 4, wherein the metal wire layer is located near to the grip area along the length of the golf shaft.

28. The golf shaft as claimed in Claim 5, wherein the metal wire layer is located near to the grip area along the

length of the golf shaft.

29. The golf shaft as claimed in Claim 6, wherein the metal wire layer is located near to the grip area along the length of the golf shaft.

30. The golf shaft as claimed in Claim 3, wherein the first metal wire layer and the second metal wire layer are located near to the grip area along the length of the golf shaft.

31. The golf shaft as claimed in Claim 4, wherein the first metal wire layer and the second metal wire layer are located near to the grip area along the length of the golf shaft.

32. The golf shaft as claimed in Claim 5, wherein the first metal wire layer and the second metal wire layer are located near to the grip area along the length of the golf shaft.

33. The golf shaft as claimed in Claim 6, wherein the first metal wire layer and the second metal wire layer are located near to the grip area along the length of the golf shaft.

34. The golf shaft as claimed in Claim 3, wherein the first metal wire layer and the second metal wire layer are



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located near to the head area along the length of the golf shaft.

35. The golf shaft as claimed in Claim 4, wherein the first metal wire layer and the second metal wire layer are located near to the head area along the length of the golf shaft.

36. The golf shaft as claimed in Claim 5, wherein the first metal wire layer and the second metal wire layer are located near to the head area along the length of the golf shaft.

37. The golf shaft as claimed in Claim 6, wherein the first metal wire layer and the second metal wire layer are located near to the head area along the length of the golf shaft.

38. The golf shaft as claimed in Claim 1, wherein the metal wire layer consists of flat metal wires aligned in the circumferential direction or perpendicularly to the axis of the main layer and the metal wire layer is located near to the grip area along the length of the golf shaft.

39. The golf shaft as claimed in Claim 1, wherein the metal wire layer consists of flat metal wires aligned in the circumferential direction or perpendicularly to the axis of

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the main layer and the metal wire layer is located near to the head area along the length of the golf shaft.

40. The golf shaft as claimed in Claim 1, wherein the metal wire layer consists of flat metal wires aligned in parallel with the axis of the main layer and the metal wire layer is located near to the head area along the length of the golf shaft.

41. The golf shaft as claimed in Claim 1, wherein the metal wire layer consists of flat metal wires aligned in parallel with the axis of the main layer and the metal wire layer is located near to the grip area along the length of the golf shaft.

Sub B4 42. A golf club consisting of a head set on one end of any of the golf shafts as claimed in Claims 1 to 39 and a grip covering the other end, wherein the metal wire layer lies somewhere in the uncovered area between the head and grip.

43. A golf shaft forming method comprising the steps of:

making a main layer by winding resin-impregnated high-strength, high-elasticity fiber on a tapered mandrel;

winding a first glass prepreg having aligned metal wires bonded to it, on the larger diameter side of the main

layer with the metal wires inside; and

winding a second glass prepreg having spaced and aligned flat metal wires bonded to glass fiber prepreg, on the first glass prepreg with the flat metal wires inside.

44. A golf shaft forming method comprising the steps of:

making a main layer by winding resin-impregnated high-strength, high-elasticity fiber on a tapered mandrel;

winding a laminate sheet having aligned metal wires between a prepreg made of the same material as the main layer and a glass fiber prepreg, on the larger diameter side of the main layer with the glass fiber prepreg inside; and

winding a second glass prepreg having spaced and aligned flat metal wires bonded to glass fiber prepreg, on the laminate sheet, with the flat metal wires inside.

45. A golf shaft forming method comprising the steps of:

making a main layer by winding resin-impregnated high-strength, high-elasticity fiber on a tapered mandrel;

winding a laminate sheet having aligned metal wires between a prepreg made of the same material as the main layer and a glass fiber prepreg, on the larger diameter side of the

main layer with the glass fiber prepreg outside; and

winding a glass sheet having spaced and aligned flat metal wires between two glass fiber prepregs, on the laminate prepreg.

46. A shaft forming method in which, after baking a fiber prepreg wound on a mandrel, the formed surface is ground to produce a fiber-reinforced shaft,

wherein a fiber prepreg with a different elasticity is partially placed as appropriate at least on the surface to be ground after baking; after baking, the whole surface of the formed shaft is uniformly ground to partially vary the flexural rigidity along the shaft.

47. A shaft forming method in which, after baking a fiber prepreg wound on a mandrel, the formed surface is ground to produce a fiber-reinforced shaft,

wherein a low-elasticity prepreg is partially placed over a high-elasticity fiber prepreg as appropriate at least on the surface to be ground after baking; after baking, the whole surface of the formed shaft is uniformly ground to make the area of the low-elasticity prepreg have a higher flexural rigidity than the other areas.

48. A shaft forming method in which, after baking a fiber

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prepreg wound on a mandrel, the formed surface is ground to produce a fiber-reinforced shaft, wherein a low-elasticity glass fiber prepreg is partially placed over a high-elasticity fiber prepreg as appropriate at least on the surface to be ground after baking; after baking, the whole surface of the formed shaft is uniformly ground to make the area of the low-elasticity prepreg have a higher flexural rigidity than the other areas.

49. The golf shaft forming method as claimed in Claim 48, wherein there is at least a metal fiber layer just under the low-elasticity prepreg consisting of a glass fiber prepreg.

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